

Claims

- [c1] An extraction cleaning machine comprising:
a housing;
a cleaning solution dispensing system mounted to the housing and including:
a cleaning solution tank for holding a liquid cleaner to be applied to a surface to be cleaned;
a fluid dispenser for dispensing the liquid cleaner onto a surface to be cleaned;
and
a liquid cleaner conduit between the cleaning solution tank and the fluid dispenser for passing liquid from the cleaning solution tank to the fluid dispenser;
a fluid recovery system mounted to the housing for recovering expended cleaning solution from the surface to be cleaned and including:
a suction nozzle associated with the housing for retrieving soiled liquid from the surface to be cleaned;
a recovery tank for collecting recovered soiled liquid;
a working air conduit in fluid communication with the suction nozzle and the recovery tank; and
a suction source in communication with the suction nozzle, the working air conduit and the recovery tank for withdrawing a liquid and air mixture from the surface to be cleaned through the suction nozzle and the working air conduit and depositing soiled liquid in the recovery tank;
the improvement which comprises:
the cleaning solution tank and the recovery tank both comprise a flexible membrane whereby the recovery tank can expand as recovered fluid is received therein and the cleaning solution tank can collapse as the cleaning fluid is dispensed therefrom; and
wherein the dispensing tank and the recovery tank are adjacent to one another in a common space and positioned so that the dispensing tank collapses as the recovery tank expands.

[c2] An extraction cleaning machine according to claim 1 wherein the cleaning solution dispensing system further comprises at least additional tank for an

additional liquid, an additive conduit between the at least one additional tank and the liquid cleaner conduit for adding liquid from the additional tank to the cleaning solution.

- [c3] An extraction cleaning machine according to claim 2 wherein the at least one or each additional tank in the dispensing system each comprises a flexible membrane that collapses as liquid therein is dispensed therefrom.
- [c4] An extraction cleaning machine according to claim 3 wherein all of the tanks are mounted in a confined shell in the housing wherein the volume occupied by the tanks remains substantially constant during use of the cleaning machine.
- [c5] An extraction cleaning machine according to claim 4 wherein the housing comprises a base module adapted to move along a surface to be cleaned and a handle pivotally mounted to the base module, and wherein all of tanks are mounted to the base module.
- [c6] An extraction cleaning machine according to claim 5 wherein the tanks are arranged in side by side horizontal alignment in the base module.
- [c7] An extraction cleaning machine according to claim 5 wherein the tanks are arranged in vertically stacked alignment in the base module.
- [c8] An extraction cleaning machine according to claim 4 wherein the recovery tank is biased into an expanded condition.
- [c9] An extraction cleaning machine according to claim 4 wherein the housing comprises a base module adapted to move along the surface to be cleaned and a handle is pivotally mounted to the base module, and wherein all of the tanks are mounted on the upright handle.
- [c10] An extraction cleaning machine according to claim 9 wherein the tanks are arranged in side by side alignment in the base module.
- [c11] An extraction cleaning machine according to claim 9 wherein the tanks are arranged in vertically stacked alignment in the base module.
- [c12] An extraction cleaning machine according to claim 4 wherein the recovery tank

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is biased into an expanded condition.

- [c13] An extraction cleaning machine according to claim 12 wherein the recovery tank itself has a natural bias to the expanded condition and in the tank is biased into the expanded condition by the resilient nature of the recovery tank.
 - [c14] An extraction cleaning machine according to claim 12 wherein the recovery tank has interior springs that bias the recovery tank to the expanded position.
 - [c15] An extraction cleaning machine according to claim 12 wherein the vacuum source is downstream of the recovery tank to draw the air and water mixture into the recovery tank.
 - [c16] An extraction cleaning machine according to claim 12 wherein the each or at least one cleaning solution tank is biased to a collapsed condition.
 - [c17] An extraction cleaning machine according to claim 2 and further comprising an adjustable valve for adjusting the relative proportions of additional liquid and liquid cleaner dispensed onto the surface to be cleaned by the fluid dispenser.
 - [c18] An extraction cleaning machine according to claim 1 further comprising an air/water separator removably mounted to the housing and connected to the working air conduit and to the recovery tank, and the recovery tank is mounted to the air/water separator.
 - [c19] An extraction cleaning machine according to claim 18 wherein the cleaning solution tank is also mounted to the air/water separator.
 - [c20] An extraction cleaning machine according to claim 19 wherein the cleaning solution tank and the recovery tank are mounted to the air/water separator in horizontally juxtaposed orientation and secured to the air/water separator with inextensible straps to confine the cleaning solution tank and the recovery tank to a fixed space.
 - [c21] An extraction cleaning machine according to claim 19 wherein the cleaning solution tank and the recovery tank are mounted to the air/liquid separator in vertical orientation.

- [c22] An extraction cleaning machine according to claim 1 wherein all the tanks are mounted in a confined shell in the housing wherein the volume occupied by the tanks remain substantially constant during the use of the cleaning machine.
- [c23] An extraction cleaning machine according to claim 22 wherein the housing comprises a base module adapted to move along a surface to be cleaned and a handle pivotally mounted to the base module, and where all of the tanks are mounted on the base module.
- [c24] An extraction cleaning machine according to claim 23 wherein the tanks are arranged in side by side alignment in the base module.
- [c25] An extraction cleaning machine according to claim 23 wherein the tanks are arranged in vertically stacked alignment in the base module.
- [c26] An extraction cleaning machine according to claim 22 when the recovery tank is biased into an expanded condition.
- [c27] An extraction cleaning machine according to claim 22 wherein the housing comprises a base module adapted to move along a surface to be cleaned and a handle pivotally mounted to the base module, and wherein all of the tanks are mounted on the upright handle.
- [c28] An extraction cleaning machine according to claim 27 wherein the tanks are arranged in side by side alignment in the base module.
- [c29] An extraction cleaning machine according to claim 27 wherein the tanks are arranged in vertically stacked alignment in the base module.
- [c30] An extraction cleaning machine according to claim 1 wherein the recovery tank is biased into an expanded condition.
- [c31] An extraction cleaning machine according to claim 30 wherein the recovery tank itself has a natural bias to the expanded condition and the recovery tank is biased into the expanded condition by the resilient nature of the recovery tank.
- [c32] An extraction cleaning machine according to claim 30 wherein the recovery tank has interior springs that bias the recovery tank to the expanded position.

- [c33] An extraction cleaning machine according to claim 30 wherein the vacuum source is downstream of the recovery tank to draw the air and water mixture into the recovery tank.
- [c34] An extraction cleaning machine according to claim 30 wherein the solution tank is biased to a collapsed condition.